ENVIRONMENTAL PRODUCT DECLARATION

as per *ISO 14025* and *EN 15804+A2*

Owner of the Declaration	**Kvadrat Acoustics A/S**
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-KVC-20210256-IAC1-EN
Issue date	09/12/2021
Valid to	08/12/2026

SC Broadline product

Kvadrat Acoustics A/S

Institut Bauen und Umwelt e.V.

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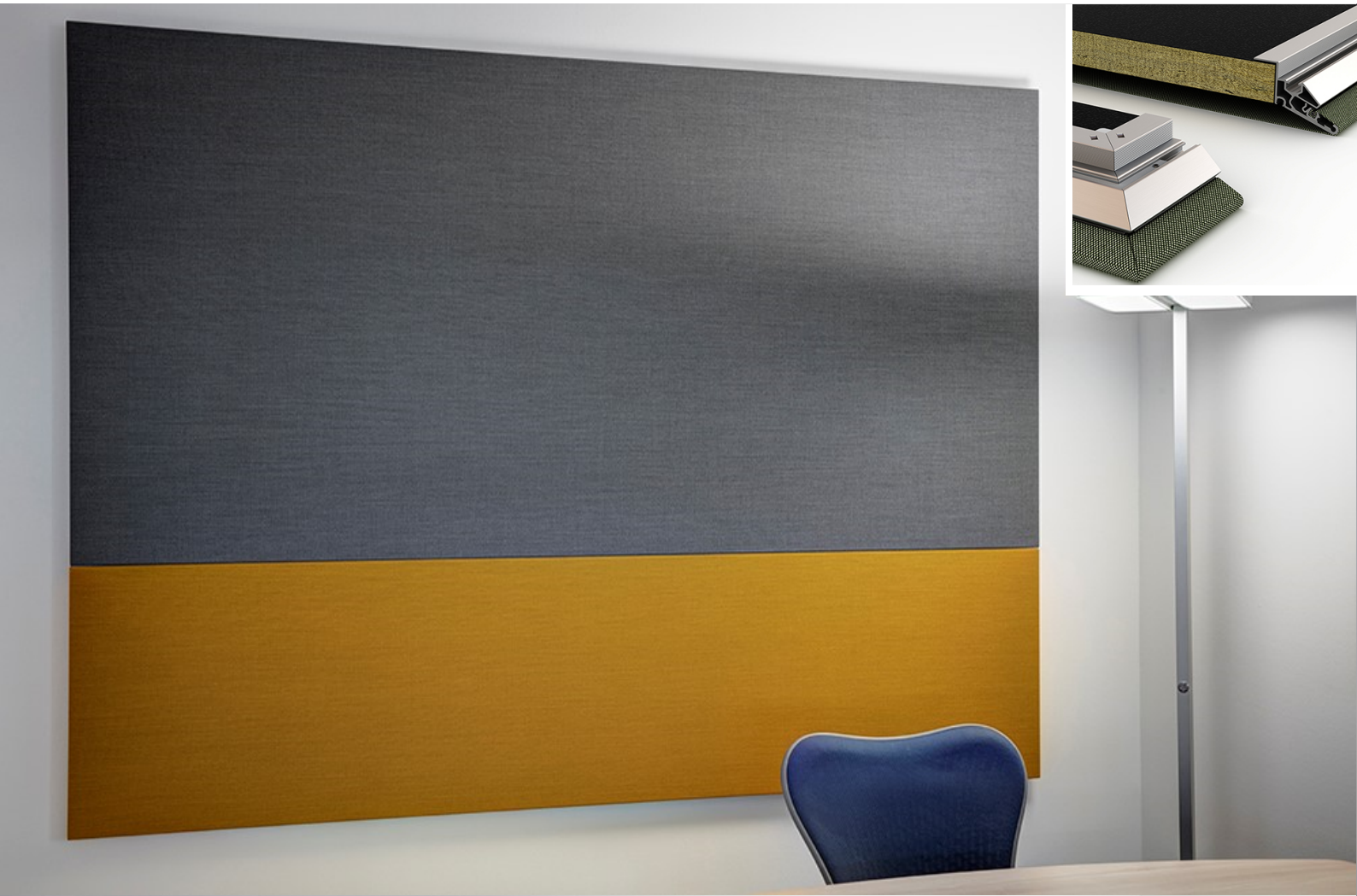

kvadrat acoustics

General Information

Kvadrat Acoustics A/S

Programme holder
IBU – Institut Bauen und Umwelt e.V.
Panoramastr. 1
10178 Berlin
Germany

Declaration number
EPD-KVC-20210256-IAC1-EN

This declaration is based on the product category rules:
Textile covered acoustic frame systems, 01.2018
(PCR checked and approved by the SVR)

Issue date
09/12/2021

Valid to
08/12/2026

Dipl. Ing. Hans Peters
(chairman of Institut Bauen und Umwelt e.V.)

Dr. Alexander Röder
(Managing Director Institut Bauen und Umwelt e.V.))

SC Broadline product

Owner of the declaration
Kvadrat Acoustics A/S
Orient Plads 1, 1.
DK-2150 Nordhavn

Declared product / declared unit
1m^2 configurable acoustic frame system

Scope:
The declaration covers a model of configurable textile covered acoustic frame systems from the company Kvadrat Soft Cells. The model is named Broadline and the declaration includes fitting systems for installing the frames. The product is assembled at a production site in Gadki, Poland, and the production data was collected for the year 2020.

The owner of the declaration shall be liable for the underlying information and evidence; the IBU shall not be liable with respect to manufacturer information, life cycle assessment data and evidences.
The EPD was created according to the specifications of *EN 15804+A2*. In the following, the standard will be simplified as *EN 15804*.

Verification

The standard *EN 15804* serves as the core PCR
Independent verification of the declaration and data according to *ISO 14025:2010*
☐ internally ☒ externally

Dr.-Ing. Nikolay Minkov
(Independent verifier)

Product

Product description/Product definition

As a general rule, the configurable textile covered acoustic frame system serves as a sound control system, and adds to the aesthetic design of interior walls and ceilings.

The system is based on the following principles:
The front textile membrane is attached to a specially designed frame profile with an integrated tensioning system, which is then positioned as a panel on the wall or in the ceiling using various types of fitting systems such as for example magnets, wires (for suspended ceilings), while hinges can also be used if regular subsequent access behind the panel is desired.
As part of the Broadline model of frame systems a layer of acoustic padding in the form of mineral wool is used for sound absorption inside the panels.

The frame systems come in customised sizes and can be combined to cover a given surface area.

For the use and application of the product the respective national provisions at the place of use apply, in Germany for example the Building Codes of the countries and the corresponding national specifications.

Application
The application is sound control and the products add to the aesthetic design of interior walls and ceilings. The products can be applied in many different markets, architectural needs and acoustic environments. Examples of these are offices, auditoriums, libraries, hotels and public spaces.

Technical Data

Constructional data

Name	Value	Unit
Sound absorption coefficient cf. ISO-354	0.1 - 1	-
Dimensions max. (l x w x h)	6000*3000 *49	mm
Dimensions min. (l x w x h) *	2000*500* 49	mm
Fire performance cf. EN-13501-1	A1 to E	-

* Smaller sizes are available from KSC, but are not covered by the EPD.

Performance data of the product with respect to its characteristics in accordance with the relevant technical provision (No CE-marking).

Base materials/Ancillary materials

The content stated in the table refers to the product not counting packaging materials

Name	Value	Unit
Main profile, bracing profile, binding profile of aluminium	54	wt-%
Sound absorber made of mineral wool accounts	31	wt-%
Front textiles	6	wt-%
Other materials	9	wt-%

This product does not contain substances listed in *the candidate list* (date: 25.06.2020) exceeding 0.1 percentage by mass.

Reference service life
The RSL is not required for the EPD because the use stage modules are not declared.

LCA: Calculation rules

Declared Unit
Some product components come in a number of different varieties, but more than 90% of the products use only a few of these varieties. In this case the few varieties are applied to represent the full range. For example, this applies to the front textiles, where a polyester and a wool textile are applied in the average frame system although some products (<10%) apply other front textile materials.

There are five overall fitting systems, which are included in the product declaration by calculating an arithmetic average. The same applies to the average size of the panels.

Declared unit

Name	Value	Unit
Declared unit	1	m^2
Conversion factor to 1 kg	6.4	kg/m^2
conversion factor [Mass/Declared Unit]	-	-
Content of frame (based on weight)	54	%
Content of textile membrane (based on weight)	6	%
Deviation from frame (max. kg/m^2)	46	%
Panel size average	2	m^2

System boundary
The EPD is of the type cradle-to-gate with options, modules C1-C4 and D.

Comparability
Basically, a comparison or an evaluation of EPD data is only possible if all the data sets to be compared were created according to *EN 15804* and the building context, respectively the product-specific characteristics of performance, are taken into account.

GaBi Sphera version 2021.2 background databases were applied

LCA: Scenarios and additional technical information

Characteristic product properties
Information on biogenic Carbon

In the Broadline products, the total mass of biogenic carbon-containing materials is less than 5 % and is therefore omitted.

Information on describing the biogenic Carbon Content at factory gate

Name	Value	Unit
Biogenic Carbon Content in accompanying packaging (cardboard)	0.25	kg C

Only modules A1-A3 are declared.

The manufacturing activities at the production site are assembly related and done mostly by hand. This includes cutting, assembly with the use of hand tools, quality control and packaging.

Installation into the building (A5)

Module A5 is not declared. However, the packaging materials are disposed of in A5 and therefore a scenario for this is included.

Name	Value	Unit
Plastic packaging for recycling	0.37	kg
Cardboard packaging for incineration	0.315	kg

End of life (C1 - C4)

Name	Value	Unit
Collected separately	6.38	kg
Recycling	4.03	kg
Landfilling	2.34	kg

Reuse, recovery and/or recycling potentials (D), relevant scenario information

Name	Value	Unit
Replaced primary aluminium	2.29	kg
Replaced primary steel	0.09	kg
Replaced primary galvanized steel	0.24	kg

Some zinc and neodymium are also recycled at end-

of-life, but no replacement of primary metal was included for these metals.

LCA: Results

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; ND = MODULE OR INDICATOR NOT DECLARED; MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	MNR	MNR	MNR	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 m² Kvadrat Soft Cells SC Broadline product

Core Indicator	Unit	A1	A2	A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	3.13E+1	2.47E-1	3.99E+0	0.00E+0	3.79E-2	1.72E-2	6.28E-1	-2.00E+1
GWP-fossil	[kg CO_2-Eq.]	3.09E+1	2.46E-1	4.13E+0	0.00E+0	3.76E-2	1.71E-2	8.18E-2	-2.00E+1
GWP-biogenic	[kg CO_2-Eq.]	3.33E-1	2.44E-4	-1.46E-1	0.00E+0	-4.79E-5	5.58E-6	5.46E-1	2.08E-3
GWP-luluc	[kg CO_2-Eq.]	2.52E-2	3.33E-4	1.62E-3	0.00E+0	3.08E-4	1.18E-4	1.10E-4	-7.10E-3
ODP	[kg CFC11-Eq.]	1.92E-7	2.18E-17	3.66E-12	0.00E+0	4.80E-18	4.44E-17	1.82E-16	-5.58E-14
AP	[mol H^+-Eq.]	1.53E-1	9.53E-4	6.54E-3	0.00E+0	1.21E-4	1.66E-4	3.53E-4	-7.51E-2
EP-freshwater	[kg PO_4-Eq.]	7.62E-4	1.52E-7	2.02E-5	0.00E+0	1.12E-7	4.88E-8	5.32E-6	-9.26E-6
EP-marine	[kg N-Eq.]	1.01E-1	4.32E-4	2.27E-3	0.00E+0	5.58E-5	8.12E-5	3.31E-4	-1.29E-2
EP-terrestrial	[mol N-Eq.]	3.28E-1	4.74E-3	2.34E-2	0.00E+0	6.23E-4	8.92E-4	1.11E-3	-1.40E-1
POCP	[kg NMVOC-Eq.]	6.58E-2	1.18E-3	6.88E-3	0.00E+0	1.09E-4	2.37E-4	4.69E-4	-3.86E-2
ADPE	[kg Sb-Eq.]	1.92E-4	9.86E-9	4.06E-7	0.00E+0	2.86E-9	1.88E-8	4.71E-9	-1.74E-5
ADPF	[MJ]	4.25E+2	3.32E+0	8.04E+1	0.00E+0	5.00E-1	3.34E-1	7.98E-1	-2.64E+2
WDP	[m^3 world-Eq deprived]	6.85E+0	6.19E-4	1.30E-1	0.00E+0	3.26E-4	3.20E-3	5.17E-3	-1.32E+0

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 m² Kvadrat Soft Cells SC Broadline product

Indicator	Unit	A1	A2	A3	C1	C2	C3	C4	D
PERE	[MJ]	1.59E+2	3.69E-2	9.56E+0	0.00E+0	2.79E-2	2.46E-2	8.23E-2	-8.49E+1
PERM	[MJ]	4.67E+0	0.00E+0	4.50E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
PERT	[MJ]	1.63E+2	3.69E-2	1.41E+1	0.00E+0	2.79E-2	2.46E-2	8.23E-2	-8.49E+1
PENRE	[MJ]	4.22E+2	3.33E+0	6.04E+1	0.00E+0	5.01E-1	3.35E-1	7.99E-1	-2.64E+2
PENRM	[MJ]	3.54E+0	0.00E+0	2.00E+1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
PENRT	[MJ]	4.26E+2	3.33E+0	8.04E+1	0.00E+0	5.01E-1	3.35E-1	7.99E-1	-2.64E+2
SM	[kg]	1.81E+0	0.00E+0	1.22E-1	0.00E+0	1.22E-1	0.00E+0	0.00E+0	0.00E+0
RSF	[MJ]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
NRSF	[MJ]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
FW	[m^3]	4.24E-1	4.65E-5	8.42E-3	0.00E+0	3.19E-5	9.21E-5	1.55E-4	-1.80E-1

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 m² Kvadrat Soft Cells SC Broadline product

Indicator	Unit	A1	A2	A3	C1	C2	C3	C4	D
HWD	[kg]	2.79E-4	4.32E-11	9.43E-8	0.00E+0	2.52E-11	1.87E-11	1.15E-10	-4.98E-5
NHWD	[kg]	5.71E+0	3.56E-4	5.36E-1	0.00E+0	7.44E-5	8.96E-5	2.24E+0	-4.25E+0
RWD	[kg]	2.13E-2	2.98E-6	6.01E-4	0.00E+0	6.06E-7	4.31E-6	8.84E-6	-1.96E-2
CRU	[kg]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
MFR	[kg]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	4.03E+0	0.00E+0	0.00E+0
MER	[kg]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
EEE	[MJ]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
EET	[MJ]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional:

1 m² Kvadrat Soft Cells SC Broadline product

Indicator	Unit	A1	A2	A3	C1	C2	C3	C4	D
PM	[Disease Incidence]	1.69E-6	3.33E-9	7.03E-8	0.00E+0	6.53E-10	3.73E-9	3.99E-9	-7.76E-7
IR	[kBq U235-Eq.]	5.62E+0	4.08E-4	9.20E-2	0.00E+0	8.67E-5	6.83E-4	1.11E-3	-4.26E+0
ETP-fw	[CTUe]	7.58E+2	2.41E+0	2.27E+1	0.00E+0	3.61E-1	2.31E-1	1.17E+0	-9.88E+1
HTP-c	[CTUh]	1.86E-7	4.54E-11	7.87E-10	0.00E+0	7.29E-12	4.96E-12	5.18E-11	-1.42E-8
HTP-nc	[CTUh]	6.80E-7	2.23E-9	4.18E-8	0.00E+0	4.29E-10	2.97E-10	5.73E-9	-2.06E-7
SQP	[-]	3.44E+2	1.89E-1	7.50E+1	0.00E+0	1.72E-1	7.45E-2	1.07E-1	-1.66E+1

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

It is noted that the ODP, EP-freshwater and ADPE results are sensitive to the choice of a suspension system. Particularly, these results may increase significantly if the linear magnet suspension system is used.

Use of secondary material includes aluminium, cardboard, stainless steel and zinc. Use of secondary fuels all come from secondary datasets as no secondary fuels are used at the KSC manufacturing site.

References

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EN 15804
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ECHA Candidate List
List of substances of very high concern considered for approval (status 25.06.2020) according to Article 59 para. 10 of the REACH Regulation. European Chemicals Agency

GaBi LCA software and database
The LCA modelling software is GaBi program version 10.5.1.125 with corresponding databases from Sphera Solutions GmbH. Documentation www.gabisoftware.com/support/gabi.

Publisher
Institut Bauen und Umwelt e.V.
Panoramastr. 1
10178 Berlin
Germany

Tel +49 (0)30 3087748- 0
Fax +49 (0)30 3087748- 29
Mail info@ibu-epd.com
Web **www.ibu-epd.com**

Programme holder
Institut Bauen und Umwelt e.V.
Panoramastr 1
10178 Berlin
Germany

Tel +49 (0)30 - 3087748- 0
Fax +49 (0)30 – 3087748 - 29
Mail info@ibu-epd.com
Web **www.ibu-epd.com**

Author of the Life Cycle Assessment
FORCE Technology
Park Alle 345
2605 Brøndby
Denmark

Tel +4543250856
Fax +4543250010
Mail chme@force.dk
Web **www.forcetechnology.com**

Owner of the Declaration
Kvadrat Acoustics A/S
Orient Plads 1
2150 Nordhavn
Denmark

Tel +4589531866
Fax +4561687776
Mail kavi@softcells.com
Web **www.softcells.com**